



Automatic Sprinklers: Water Mist Nozzles

No. FP-2013-20 May 14, 2013

Learning Objective: The student shall be able to describe the listing criteria for nozzles used in water mist fire protection systems.

The application of high-, medium-, and low-pressure water mist fire protection systems is growing, especially in those locations where fire protection water supplies are limited. Water mist systems have proven effective in Class A and B fire control applications around the world.

Like automatic sprinklers, water mist nozzles must be listed by an independent, third-party testing service. (See Coffee Break Training FP-2010-21 for a definition of “listed.”) The nozzles may be listed individually or as part of a pre-engineered fire protection system. Approvals and listing criteria can be obtained from FM Global Standard 5560 or Underwriters Laboratories 2167 *Water Mist Nozzles for Fire Protection Service*.

The listing information provided by the manufacturer must include the following documentation:

- The specific hazards for which the nozzle is listed and its protection objectives such as fire extinguishment, fire suppression, fire control, temperature control or exposure protection.
- The water discharge volumetric flow rate characteristics of each nozzle.
- The maximum allowable height of the space where the nozzle can be installed.
- The minimum distance between nozzle tip or diffuser and the plane of protection around equipment or machinery.
- The maximum and minimum allowable spacing between nozzles.
- The maximum coverage area per nozzle.
- The maximum height between ceiling and nozzle diffuser or tip.
- Any obstruction spacing criteria for nozzles.
- The maximum spacing of nozzles from walls.
- The minimum- and maximum-rated operating pressures of nozzles.
- The allowable range of nozzle orientation angles from 90 degrees (1.6 rad) down from the compartment ceiling. Not all nozzle configurations have to be perpendicular to the compartment ceiling.
- The classification of automatic nozzle thermal response characteristics as fast, special or standard response. (See Coffee Break Training 2007-1.)
- The maximum compartment volume that can be protected.
- The maximum time delay for water mist delivery to the most remote nozzle.

Note that the nozzles illustrated are closed nozzles that operate with a heat responsive element like automatic sprinklers. There also are open nozzles that are used in specific applications in enclosed spaces such as around power generating equipment where there are only incidental amounts of Class A combustibles (especially in marine applications) and hybrid type nozzles that are controlled by separate detection systems.

For additional information, refer to National Fire Protection Association 750, *Standard on Water Mist Fire Protection Systems*.



These closed-type water spray nozzles are specially designed for use with water mist fire protection systems.

